Amend as follows:

IN THE SPECIFICATION:

On page 1, before line 3, please insert the following heading:

Background of the Invention

On page 1, please amend the paragraph contained within lines 15-28 as follows:

It is also known that one can systematically use certain electrical characteristics with certain substances between the electrodes and an electrode structure with proper dimensions, whereby the complex resistance of such a surface structure acts as a transformer for voltage and current. Particular examples of this [according to IPC H01C 17/242] are the resistances and capacitors for thick and thin layer technology, whose adjustment to the final value is often achieved through the fine adjustment of the surface structure. This is done, for example, using systematic incisions with a laser. For this, the electrode material and the substance between them are suitably selected. In particular, air can be selected as a dielectric.

On page 4, please delete the paragraph contained in lines 31-33.

On page 5, before line 1, please insert the following heading:

Summary of the Invention

On page 5, please amend the paragraph contained in lines 1-26 as follows:

The essence of the invention is that a number of conductive islands (passive electrodes) are applied on any given dielectric substrate, as a two-dimensional area arrangement, between two connection electrodes and these islands are not or are not essentially connected with one another and whereby relative to the complete filling of the interspace of the connection electrodes with the substance of the passive electrodes the conductance of the measuring probe or of the function element is changed. The total conductance of the measuring probe is dependent on the specific portion of the area of the passive electrodes. Because the two-dimensional distribution of the substance of the passive electrodes is only one dimension above that of a possible one-dimensional current path, the possibility of such a formation is very low. The remaining area of the substance represents a multiple non-contiguous area, in which the current paths spread in the area between the islands and around [these] the islands. If when using a thin carrier, for example a foil, this is included in the flux, the islands influence the area of the carrier near to the surface structure and thus also the resulting total conductance. The advantages of such an electrode structure are found in particular in the high flexibility of the representation of the conductivities of the electrodes and/or of the substance by the conductance of a measuring probe or of a function element.

On page 7, after line 5, please insert the following heading:

Brief Description of the Drawings

On page 7, before line 14, please insert the following heading:

Detailed Description of the Preferred Embodiments

Please amend page 13 as follows:

[Summary] Abstract of the Disclosure

[The invention describes an] An electrode arrangement for an electrical component and carrier for sensors[, which arrangement] is applied on a substrate (1) as a surface structure of suitable dimensions [and this] . This arrangement [is of] includes two electrically conducting electrodes (2) not electrically connected with one another[; and this has a] . A high flexibility concerning the representation of the conductivities of the electrode arrangement and/or of the substance of a sensor-active layer is provided and represents these through the conductance of a measuring probe or a function element and is simple and economical to manufacture. [According to the invention, the problem is so solved that on] On a dielectric substrate (1) between two electrodes (2), a number of conductive islands (3), which are not [or are not] essentially connected with one another, are [emplaced] positioned as a two-dimensional area arrangement.

[(See Fig. 1)]

IN THE CLAIMS:

1. An electrode arrangement for an electrical component and carrier for sensors, which arrangement is applied on a substrate (1), the arrangement consisting of two electrically conductive electrodes (2), wherein said electrodes are not electrically connected to one another, and a surface structure with suitable dimensions for representation of conductivities of the electrode arrangement and/or of a substance of a sensor-active layer by the conductance of a measuring probe or of a function element, [so characterized that] wherein on a surface of a dielectric substrate (1) between two electrodes (2) a number of conductive islands (3), which are not or are not essentially connected with one another, are applied as a two-dimensional area arrangement.

4. An electrode arrangement for an electrical component and carrier for sensors, which arrangement is applied on a substrate (1), [this] the arrangement consisting of two electrically conductive electrodes (2), wherein said electrodes [which] are not electrically connected to one another, and a surface structure with suitable dimensions for [the] representation of [the] conductivities of the electrode arrangement and/or of [the] a substance of a sensor-active layer by the conductance of a measuring probe or of a function element according to claim 1, [so characterized] wherein the conductive islands (3) are arranged within [special] selected geometric figures.

REMARKS

The present amendment is submitted in response to the Office Action dated July 31, 2002, which set a three-month period for response, making this amendment due by October 31, 2002.

Claims 1-9 are pending in this application.

In the Office Action, the specification was objected to for various informalities. It was noted that an abstract was not included with the application. Claims 4 and 7 were objected to for various informalities. Claims 1-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,358,951 to Chang in view of U.S. Patent No. 6,145,964 to Peter. Claim 8 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Chang in view or Peter, as applied to claim 1, and further in view of U.S. Patent No. 5,205,170 to Blechinger et al.

The Applicant first wishes to point out that no grounds for rejection of claim 9 were stated in the Office Action. However, on page 10, second paragraph, of the Office Action, the Examiner refers to claim 9 in an apparent discussion of the stated rejection of claim 8. The Applicant respectfully requests clarification of the status of claim 9.

Looking first at the objections to the specification, the "Summary "on page 13 of the application has been amended and designated as the Abstract of the Disclosure. The Abstract, as amended, is included herewith on a separate sheet as Attachment A.

The specification has been amended to correct the noted errors and to add appropriate headings, as requested.

With regard to the objection to the specification as failing to provide proper antecedent basis for the subject matter of claim 6, the Applicant disagrees with this conclusion. Claim 6 is directed to the limitation that the "carrier for the sensor with a sufficiently thin substrate (1) has a sensor-active layer on all sides" (see lines 10-12 of claim 6). Support for this limitation is found in the disclosure on page 6, lines 6-16.

Regarding the rejection of claim 4 as indefinite, claim 4 was amended to change "within special geometric figures" to "within selected geometric figures".

Regarding the rejection of claim 7 as indefinite, the Applicant respectfully disagrees that the phrase "hyperstructures with anisometries" is vague and indefinite. The term "anisometries" means only that the substances of the hyperstructures are in a non-isometric relationship with respect to the substrate. A similar term is "anisotropic", for example.

Turing now to the substantive rejection of the claims, the Applicant respectfully disagrees that the cited reference combination renders obvious the claimed invention.

The primary reference to Chang discloses two electrodes 18 that are applied to the surface 16 on an alumina body 14 (see Change, Fig. 1, column 2, lines 43 and 53-54). The alumina body 14 is the dielectric substrate. Chang fails to disclose any dielectric substrate between both electrodes. Between and over the electrodes, a zinc oxide thin film 12 is applied (Fig. 1, column 2, lines 38-39;

column 3, lines 8-9), which is used as the gas-sensing element and is a semiconductor (column 1, lines 8-14).

Chang further describes that the thin film 12 comprises a zinc oxide film 26 partially coated by spots 28 of palladium-gold alloy (Fig. 2, column 3, lines 6-7). The applied spots 28 of palladium-gold alloy improve substantially the responsiveness of the zinc oxide thin film for reducing gas (column 5, lines 56-58).

The Applicant respectfully disagrees with the Examiner's conclusion that Chang makes obvious the subject matter of claim 1. The present invention uses the dielectric substrate (Fig. 1 and element 1) to apply the two electrodes on its surface. Again, Chang does not disclose or suggest any dielectric substrate between the electrodes, but only shows the zinc oxide thin film semiconductor between the two electrodes (and over these).

To emphasize this distinction, the Applicant has amended claim 1 to add the phrase "on the surface "of a dielectric substrate. Support for this limitation can be found in Fig. 1.

A critical feature of the present invention is that the conductive islands 3 are directly placed on the surface of the dielectricum, having no or no essential connection to each other and to the surface of the electrodes. These are "naked".

In the present invention, there is not dielectric substance between the conductive islands or over the islands as an insulating or protective film. The

conductive islands are directly at the surface of the dielectric substrate and are not comparable with the substrate by Chang or any dielectric substrate.

It is also incorrect to compare the function of the conductive islands of Chang with the conductive islands of the present invention, because the Chang islands have the function of improving the sensitivity of the sensor. In Chang, one must heat the sensor (column 2, line 64 through column 3, line 5) to maintain a desired temperature and to get a temperature-independent resistance of the sensing film. The arrangement in the present invention does not require any heat element or thermal treatment.

The surprising effect of the present invention is the relatively simple arrangement of the carrier for sensors and represents a very high sensibility in comparison to the subject matter of the Chang reference. In the present invention, no further means are required to use the electrode arrangement in a measure head, for instance.

For the reasons noted above, the Peter reference is not relevant to this application. The present application does not disclose any dielectric substrate between the electrodes, but only electrodes at the surface of the dielectric substrates.

Moreover, the Applicant respectfully submits that the practitioner in the relevant art would not be motivated to combine Chang with Peter, and further, that such a combination of the two devices would be impossible, because Peter does not disclose any feature that would be relevant or workable with Chang.

Regarding the rejection of claim 2, the Applicant again respectfully disagrees with the basis for rejection. Specifically, Change does not disclose conductive islands on any insulating layer. Chang discloses conductive islands on the surface of a thin film semiconductor. There are essential differences between an insulator and a semiconductor.

In Chang, Fig. 1 (element 14) and column 2, lines 54-55, the alumina body is shown and described as the insulating substrate with the electrodes 18 as the conductive substance. No conductive islands are disclosed which consist of a fine distribution of conductive substances. Fig. 2 shows with element 12 the thin film (column 3, line 6) comprising a zinc oxide film 26 partially coated by spots 28 of the alloy. These alloy spots are sputtered to the surface of the semiconductor film and not to the insulator.

Regarding the rejection of claim 6, the Applicant again disagrees with the Examiner's conclusion stated in the Office Action. The cited lines 6-11 of Chang's column 3 describe that the zinc oxide film 26 is applied to the surface 16 of the alumina body 14 and over the electrodes 18. There is no suggestion of a sensor-active layer on all sides of a sufficiently thin substrate.

Likewise, the Applicant disagrees with the rejection of claim 7. Fig. 2 of Chang shows hyperstructures with anisometries of the spots 28 as the conductive islands to the zinc oxide film 26, but absolutely not to the insulating substrate in the sense of the present invention.

Regarding the rejection of claim 8, the Applicant submits that Chang's Fig. 2 shows a part of the zinc oxide film 26 with an irregular border (column 3, lines

6-8). To compare this border with ring-shaped electrodes in accordance with the present invention is not plausible. Furthermore, the shown spots 28 are arranged on the surface of the zinc oxide film 26 and not an insulating substrate.

Therefore, the arrangement of the conductive islands with ring-shaped electrodes on the insulating substrate, as defined in claim 8 of the present invention, is not obvious over Chang nor could it be derived from this reference.

Regarding claim 9, the Blechinger reference does not disclose an electrode arrangement which is designed in particular as panel heating elements. Fig. 1 by Blechinger shows a flow sensor 30 with a diaphragm 16, which has sensing/heating elements 20 disposed on it. In Blechinger, the heating elements 20 are used as the sensor; the sensor is not used as the heating element. In accordance with Blechinger, column 4, beginning at line 26, thermal anemometry is a useful tool for the measurement of air flow. Thermal anemometer-type mass air flow sensors, by definition, depend upon heat transfer for their operation, whereby the heating elements 20 are hot wire resistors. The Applicant is unfamiliar with a hot wire resistor that has an arrangement of conductive islands between two electrodes on an insulating substrate. From Blechinger, the practitioner could not draw the idea of designing the electrode arrangement as a large area as a function element, especially as a heating element or photo cell.

For the reasons set forth above, the Applicant respectfully submits that claim 1, as amended, defines a patentably distinct set of features neither shown nor suggested by the cited reference combinations. Therefore, claim 1 is

patentable over these reference combinations, as are claims 2-9, all of which depend directly or indirectly from allowable claim 1.

In light of the foregoing arguments in support of patentability, the Applicant respectfully submits that this application stands in condition for allowance. Action to this end is courteously solicited.

Should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate claim language that will place the application into condition for allowance.

Respectfully submitted,

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